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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,909

Applicant(s)

PINARD, ADAM I.

Examiner

Hai C Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-20, 22-25, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 8, 21 and 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/09/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claim 14 is objected to because of the following informalities:
 - Line 3, "different pass" should read --different passes--.Appropriate correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-7 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 and 9 of U.S. Patent No.

6,626,527. Although the conflicting claims are not identical, they are not patentably distinct from each other because the current application recites first and second ink jet printing nozzles for the same ink color depositing ink drops on a substrate, the ink drops from each printing nozzle being deflected by the corresponding deflection element to form interleaved swathed patterns, as compared to the above mentioned Patent wherein first and second jet printing fluid sources are claimed to deposit ink drops on a substrate, the ink drops from each printing fluid sources being deflected by the corresponding deflection element to form interleaved swathed patterns.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4, 6-7, 10-18, 20, 22-25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsao (U.S. 4,232,324).

Tsao discloses a spaced printing nozzle array apparatus for interlaced printing, the apparatus including a first ink jet nozzle for a first color (e.g., nozzle N-1 in sub-set S-1) depositing ink drops on a substrate (22), a first deflection element (deflection plate 21) located proximate an output trajectory of the first ink jet printing nozzle (nozzle 17, Fig. 1) and operative to deflect the ink drops in a swathed pattern (horizontal line) as they are deposited on the substrate by the first ink jet printing nozzle, a second ink jet

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printing nozzle for the first color (e.g., nozzle N-2 in sub-set S-2, the two nozzles N-1 and N-2 forming part of an array of nozzles of the same print head and thus having the same ink color) depositing ink drops on the substrate, a second deflection element located proximate an output trajectory of the second ink jet printing nozzle (similar deflection plate 21 for each nozzle) (col. 4, lines 31-52) and operative to deflect the ink drops in a swathed pattern (horizontal line) as they are deposited on the substrate by the second ink jet printing nozzle (Figs. 2, 3), interleaving logic operative to provide interleaved print data to interleave at least one deflected drop from the first inkjet printing nozzle with a plurality of deflected drops from the second inkjet printing nozzle in parallel offset rasters (during the first print pass each of the nozzles prints but the printed lines are spaced by a distance from each other, and the printed lines produced in the second print pass are spaced by the same distance but some of printed lines are spaced by a distance d from some of the printed lines of the prior print pass) (col. 5, line 58 to col. 6, line 19).

Tsao further teaches:

- the interleaving logic including vertical interleaving logic (by firing non-adjacent nozzles) (col. 6, lines 20-29);
- the print substrate being a printing plate (the recording medium 22 being supported on a flat support 23);
- the deflection element (deflection plate 21) being one of a pair of deflection electrodes (Fig. 1);

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- the first and second ink jet printing nozzles being both located on a same print head (printhead including nozzles N-1 to N-11);
- the first and second ink jet printing nozzles being spaced along a direction of rotation of a drum (col. 10, lines 41-49);
- the interleaving logic being operative to cause the first and second ink jet printing nozzles to print simultaneously (col. 5, lines 58-62);
- the interleaving logic being operative to cause the first and second ink jet printing nozzles to print drops interleaved with each other during the same pass (col. 5, lines 58-62);
- the interleaving logic being operative to cause the first and second ink jet printing nozzles to print drops interleaved with each other during the different passes (col. 5, line 58 to col. 6, line 2);
- the interleaving logic being operative to cause the first and second ink jet printing nozzles to print drops interleaved with each other during a same revolution (in the case of the drum supporting the recording medium and during the first print pass);
- the interleaving logic being operative to cause the first and second ink jet printing nozzles to print drops interleaved with each other during different revolutions (in the case of the drum supporting the recording medium) (col. 6, lines 3-19);
- a substrate feed mechanism to feed the substrate that includes the drum (in the case of using the drum supporting the recording medium);
- the substrate feed mechanism including a platen (flat support 23).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsao in view of Hickman (U.S. 4,965,593).

Tsao discloses all the basic limitations of the claimed invention except for the horizontal interleaving logic and the arrangement of the nozzles along the rotation direction of the drum.

Hickman discloses an ink jet printer for interlaced printing, the printer comprising a printing having an array of nozzles arranged in the rotation direction of the platen in the form of a drum (24) supporting the recording medium (22), the different nozzles are firing such that the filled pattern forms a check pattern interlacing in both horizontal and vertical directions, the remaining pixels would be filled in the reverse pass (Fig. 8).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Tsao with the aforementioned teaching of Hickman. The motivation for doing so would have been to provide a high resolution and high quality image.

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9. Claims 2-3, 5, 9 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsao in view of Bhattacharjya et al. (U.S. 5,963,714).

Tsao discloses all the basic limitations of the claimed invention except for the horizontal interleaving logic, the processor for processing the halftone screening logic.

Bhattacharjya et al. discloses a multicolor and mixed-mode half toning method for an ink jet printer, wherein the half toning processor (78) creates halftone dots of different shades using electronic screening technique by comparing the color space pixel values within a halftone cell to a threshold matrix, and wherein the half toning operations are performed by interleaving the ink drops in both vertical and horizontal directions (Fig. 7C) (col. 1, line 65 to col. 2, line 43) (col. 7, line 10 to col. 8, line 62).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the half toning processing as taught by Bhattacharjya et al. in the device of Tsao. The motivation for doing so would have been to provide a finer value quantization in performing continuous-tone image of higher quality.

Allowable Subject Matter

10. Claims 8, 21 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claims 8 and 26 is the

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inclusion therein, in combination as currently claimed, of the limitation of the "swathing logic that includes a series of different firing order entries that define different deflection amounts for at least one of the deflection elements", which is not found taught or fairly suggested by the prior art made of record considered alone or in combination.

The primary reason for the indication of the allowability of claim 21 is the inclusion therein, in combination as currently claimed, of the limitation that includes a "self-interleaving logic operative to further interleave deflected drops from at least one of the first and second ink jet printing nozzles with other deflected drops from that same nozzle", which is not found taught or fairly suggested by the prior art made of record considered alone or in combination.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



HAI PHAM
PRIMARY EXAMINER

April 2, 2004